ASSIGNMENT 2

Textbook Assignment: "AC Power Distribution System," chapter 3, pages 3-1 through 3-18; "Ship's Input Systems," chapter 4, pages 4-1 through 4-9; It Information Transfer Systems, "chapter 5, pages 5-1 through 5-16.

Learning Objective: Identify the fundamentals of the ship's service power distribution systems.

2-1. Which of the following systems comprises the shipboard power distribution system?

1. The casualty power system only
2. The emergency power system only
3. The ship's service system only
4. All of the above

2-2. What is the function of the switchboard bus ties?

1. To permit switchboards to be cross connected and to allow paralleling of generators
2. To allow power distribution directly from the generator to the load
3. To allow the generators to operate in series
4. To feed power to the dc generator

2-3. On small ships, centrally locating switchboards (with respect to the load) and feeding them directly from the generators have which of the following advantages?

1. It simplifies the installation
2. It reduces size and weight requirements
3. It reduces equipment requirements
4. Each of the above

2-4. Circuit information plates are located on which of the following locations?

1. The bulkhead near the fuse boxes
2. The distribution panels and bus transfer equipment
3. The electric cables
4. All equipment controllers

2-5. Why is the phase sequence important to the power distribution system aboard ship?

1. An improper phase will cause voltage fluctuations
2. The phase sequence determines the amount of current available
3. The phase sequence determines the direction of rotation of three-phase motors
4. Distribution panel bus bars are label alphabetically from top to bottom

2-6. What service is provided by bus transfer equipment?

1. It provides two sources of power to vital ship's equipment
2. It provides short-circuit protection to the ship's service generators
3. It provides overload protection to ship's circuit breakers
4. It provides protection from paralleling two switchboards that are out of phase

2-7. If NORMAL power were to fail supplying the HF transmitter, ALTERNATE power would be restored by the use of which of the following components?

1. Manual bus transfer (MBT) only
2. Automatic bus transfer (ABT) only
3. Either 1 or 2 above
4. Communications switchboard

2-8. Aboard ships, switchgear groups are physically separated as much as practical to achieve what objective?

1. Easy access for maintenance
2. Reduce accidental loss of power
3. Afford greater protection from battle damage
4. Prevent unnecessary cost and weight during ship's construction

2-9. Which of the following actions is NOT a function provided by switchboards aboard ships?

1. Automatic shifting of power to alternate sources if normal power is lost
2. Distribution of three-phase, 450 volt power
3. Circuit protection
4. Control, monitoring, protection of the ship's service generators

2-10. What is the purpose of disconnect links?

1. They provide a convenient means of load testing
2. They provide isolation from one switchboard while repairs are being conducted on another
3. They provide a means of securing switchboard power in case of fire
4. They provide over current protection to the main bus

2-11. The output of all ac generators is developed in what part of the generator?

1. The field windings
2. The stator windings
3. The rotor windings
4. The armature windings

2-12. What are the two major assemblies of an ac generator?

1. Stator and rotor
2. Stator and armature
3. Armature and rotor
4. Armature and fields

2-13. Three-phase generators have single-phase windings located what number of degrees out of phase from the other windings?

1. 90° out of phase with the other two windings
2. 120° out of phase with the other two windings
3. 180° out of phase with the other two windings
4. 360° out of phase with the other two windings

2-14. The three-phase, four-wire, STAR connected power distribution system is also know by what other term?

1. Delta connected
2. Ana connected
3. Wye connected
4. Jal connected

2-15. In a transformer, electrical energy is transferred from one circuit to another through which of the following actions?

1. Hysteresis coupling
2. Electrostatic radiation
3. Electromagnetic induction
4. Inductive reactance

2-16. Energy in a transformer is always transferred without a change in frequency, but you can expect a change in which of the following attributes?

1. Amplitude and time
2. Inductance and current
3. Current and voltage
4. Voltage and inductance

2-17. Which transformer winding is designated as the primary winding?

1. The one that receives energy from an ac source
2. The one with the highest voltage
3. The one with the lowest voltage
4. The one that delivers energy to the load

2-18. What are the two principle types of transformers?

1. Core and shell
2. primary and secondary
3. Single-phase and polyphase
4. Ac and dc

2-19. Most power supply transformers are designed to operate at frequencies of

1. 50 to 60 Hz
2. 60 to 120 Hz
3. 120 to 220 Hz
4. 220 to 400 Hz

2-20. Transformers of higher frequencies are of smaller design and permit savings of weight and use of associated equipments.

1. True
2. False

2-21. The use of varnish to insulate adjacent laminations in a transformer core helps minimize which of the following factors?

1. Heat dissipation to the enclosure
2. Hysteresis losses
3. Magnetization of the secondary winding
4. Magnetization of the primary winding

2-22. In transformer lead markings, the high voltage leads are marked H1, H2, H3, etc. The letter signifies high voltage, what does the number indicate?

1. Numerical position from the transformer's core
2. Shows total number of high voltage leads
3. The higher the number, the higher the voltage
4. Used for identification and tracing purposes

2-23. Transformer secondary lead markings are identified by which of the following letters?

1. R
2. H
3. X
4. S

2-24. Which of the following types of equipment are used to supply 400 Hertz power to a transformer?

1. Motor-generator units
2. Static converters
3. Both 1 and 2 above
4. Steam turbines

2-25. What is the primary purpose of the casualty power system?

1. To make temporary connections to vital circuits
2. To make permanent connections to vital equipment
3. To make permanent connections to vital circuits
4. To make temporary connections to ac generators

2-26. Casualty power bulkhead terminals are permanently installed on opposite sides of bulkheads for what reason?

1. To provide casualty power to selected equipment
2. To transfer power through decks without loss of watertight integrity
3. To transfer power through decks 180° out of phase with other bulkhead terminals
4. To transfer power through decks 90° out of phase with other bulkhead terminals

2-27. When a generator is used exclusively for casualty power, you must perform which of the following actions?

1. Open the generator circuit breaker
2. Open the generator disconnect links
3. Remove all normal circuits from the switchboard that the generator is feeding
4. Transfer all bus transfer switches to emergency power

2-28. A portable cable used to rig ac casualty power can carry (a) what maximum amount of current and (b) for what maximum number of hours?

1. (a) 93 A (b) 4 hours
2. (a) 93 A (b) 40 hours
3. (a) 200 A (b) 40 hours
4. (a) 200 A (b) 4 hours

2-29. Shore power connections aboard ship may be used to supply power to another ship alongside.

1. True
2. False

2-30. When testing shore power cables, you should use which of following grounds as a shore ground resistance?

1. The ship's hull
2. A 16 AWG or larger wire with one side cropped over the side of the ship
3. The enclosure that houses the shore-power terminals or receptacles
4. Phase A of the shore-power cable

2-31. What is the key component of the phase-sequence indicator?

1. The three-phase induction motor
2. The saturable reactor
3. The ion drive clutch assembly
4. The digital display

Learning Objective: Describe and identify components of various gyrocompass systems.

2-32. The gyrocompass system provides a means of determining ownship's

1. heading, roll, and pitch
2. speed, distance, and bearing
3. heading, speed, and distance
4. speed, roll, and pitch

2-33. Gyrocompass systems are identified by the mark, (Mk), and modification (Mod) system. The MK number designates a

1. major development of a compass
2. major modification of a compass
3. a change to a major development of a compass
4. a major modification to a change of a compass

2-34. The Mk 19 gyrocompass consists of four major components: the control cabinet, the failure annunciator, the master compass and the

1. power supply
2. slave compass
3. indicator
4. power converter

2-35. Thirty-six speed indicators are used instead of single-speed indicators when least precise readings are required.

1. True
2. False

2-36. The Mk 23 gyrocompass consists of what major units?

1. The master unit and control cabinet only
2. The compass failure annunciator, alarm bell only
3. The alarm control and speed unit only
4. All of the above

2-37. What are the three major components that make up the Mk 27 gyrocompass?

1. The master unit, control cabinet, and power converter
2. The master unit, switching unit, and power converter
3. The master unit, slave unit, and control cabinet
4. The master unit, speed compensator, and switching unit

2-38. The AN/WSN-2 stabilized gyrocompass consists of five major components: the inertial measuring unit, the control power supply, the amplifier synchro signal, the battery set, and what other unit?

1. The master unit
2. The slave unit
3. The speed compensating unit
4. The control indicating unit

2-39. Generally each radar system will have its own synchro signal amplifier.

1. True
2. False

2-40. Synchro signal converters can convert 60 Hz to 400 Hz and 400 Hz to 60 Hz. What other conversions can it make?

1. Relative bearing to true bearing
2. Synchro speed
3. Synchro frequency
4. All of the above

2-41. What number of the AN/WSN-5 inertial navigation sets are generally installed on board?

1. Four
2. Three
3. Two
4. One

2-42. The underwater log system measures and indicates what attributes?

1. Speed of the ship in knots and distance traveled through the water in statue miles
2. Speed of the ship in miles per hour and distance traveled through the water in knots
3. Speed of the ship in knots and distance traveled through the water in nautical miles
4. Speed of the ship in miles per hour and distance traveled through the water in miles per hour

2-43. Which of the following equipments are types of underwater log systems?

1. Electro-static and Doppler
2. Electro-static and phased-array
3. Electromagnetic and phased-array
4. Electromagnetic and Doppler

2-44. The sea valve, provides support for the rodmeter, and also provides a seal to the hull when the rodmeter is removed. What other function, if any, does the sea valve provide?

1. It provides the data for its transmission to the underwater log system
2. It monitors the flow of data in the underwater log system
3. It provides conversion of input data to the underwater log system
4. None

2-45. What is another term for the name rodmeter?

1. Foot
2. Boot
3. Knife
4. Sword

2-46. What are two types of digital switchboards?

1. Automatically controlled and manually controlled
2. Analog controlled and digitally controlled
3. Manually controlled and remotely controlled
4. Automatically controlled and remotely controlled

2-47. On digital switchboards, what is the minimum number of manual switches required for each I/O device computer channel?

1. One
2. Two
3. Three
4. Four

2-48. Control signals used to select the desired switch configuration are generated by which of the following devices?

1. DFCS only
2. CSCP only
3. Both 1 and 2 above
4. The DSCS only

2-49. Each DFCS section contains what maximum amount of switch panels?

1. 12
2. 18
3. 24
4. 32

2-50. The linear movement switches are usually positioned by control signals from what source?

1. DSCS
2. DFCS
3. CSMP
4. CSCP

2-51. The power distribution panel assembly contains six indicators mounted on the front of the panel to indicate the presence of power when applied to the panel.

1. True
2. False

2-52. Linear switches perform either three-position or five-position switching functions. The three-position switches are used for

1. NORMAL/ALTERNATE switching with an OFF position
2. NORMAL/ALTERNATE switching with an ON position
3. REMOTE/MANUAL with an OFF position
4. REMOTE/MANUAL with an ON position

2-53. When a linear switch is in the remote position, what piece of equipment has control of the switch position?

1. DFCS
2. CSCP
3. The computer
4. Remote equipment

2-54. The switch control and potentiometer transformer ACO assembly is used to provide voltages for bench testing which of the following DFCS panels?

1. Relay tester assemblies
2. Power distribution panels
3. Linear movement switches
4. All of the above

2-55. Four colors are used for PBI indicators on the CSCP: white, red, green and yellow. What indication is provided by yellow?

1. Switch is the ON position
2. Switch is in the OFF position
3. Switch is in the ALTERNATE position
4. A logic error exists in the PBI circuitry

2-56. The HOLD PBIs are used to indicate what function?

1. Control transfer initiated
2. Control transfer complete
3. Control transfer refusal
4. Each of the above

2-57. Ship's wire marking codes provide what information?

1. Circuit designation, function number and assigned wire number
2. Function number, circuit designation and assigned wire number
3. Assigned wire number, circuit designation and function number
4. Function number, assigned wire number and circuit designation

2-58. A ship's wire has a plastic sleeve with the following markings on it, 12 PD 1952. What does the 1952 indicate?

1. The year the cable was manufactured
2. The circuit designation
3. The function number
4. Assigned wire number

2-59. What two types of connectors does the CSCP use?

1. 10-pin and 85-pin
2. P and J
3. Type A and Type B
4. Amphenol and Portsmouth

2-60. Reference designations of JA, JB, JN, and JP are used with what type connectors?

1. P-connectors
2. Type B connectors
3. 10-pin connectors
4. Amphenol connectors

2-61. Each analog switchboard section contains what maximum number of panels?

1. 6
2. 12
3. 24
4. 36

IN ANSWERING QUESTIONS 2-62 THROUGH 2-66, SELECT FROM THE FOLLOWING LIST THE ANALOG SWITCHBOARD PANEL THAT PERFORMS THE FUNCTION LISTED IN EACH QUESTION.

A. Indicator panel assembly

B. Fuse panel assembly

C. Meter panel assembly

D. Flasher panel assembly

E. Snap switch panel assembly

2-62. Monitors ac and dc power buses.

1. A
2. B
3. C
4. D

2-63. Contains overflow fuses for associated switch panels.

1. A
2. B
3. C
4. D

2-64. Provides a visual indication of the active power being supplied to the switchboard.

1. A
2. B
3. C
4. D

2-65. Indicates a warning or emergency condition.

1. B
2. C
3. D
4. E

2-66. Provides manual control of switchboard power buses.

1. B
2. C
3. D
4. E

2-67. Manually operated JR switch panel assemblies and remotely operated JR switch panel assemblies provide the same function with the exception that one can be operated remotely.

1. True
2. False

2-68. When a control signal is fed back to the KCMX as a status signal input by the switchboard for test purposes, the switchboard is in which of the following configurations?

1. NORMAL
2. OFF
3. REMOTE
4. EAT

2-69. The SB-4229/SP switchboard replaces which of the following switchboards?

1. SB-440
2. SB-1109
3. SB-1505
4. Each of the above

2-70. The SB-4229/SP can accept (a) how many radar set inputs and (b) distribute them to what number of radar indicators?

1. (a) Five (b) four
2. (a) Five (b) six
3. (a) Six (b) nine
4. (a) Nine (b) sixteen

2-71. The signal data converter (SDV) conditions and multiplexes its various data inputs into a single analog data stream.

1. True
2. False

2-72. All replaceable modules, assemblies and printed circuit boards with a high-cost value are designed and constructed to be repairable to component level with the exception of which of the following components?

1. High-voltage power supplies
2. CRT back plane wiring harness
3. Both 1 and 2 above
4. Back plane wiring harness

2-73. On the SB-988/SRT Transmitter Transfer Switchboard, each knob has 8 positions. What position removes the remote from the system?

1. 8
2. 7
3. 6
4. 5

2-74. The SB-973/SRT receiver switchboard allows the audio outputs of the receivers to be

1. heterodyned and transferred to remote stations
2. multiplexed and transferred to remote stations
3. transferred to remote stations
4. amplified and transferred to remote stations

2-75. The SB-973/SRT switchboard contains 10 switches that have what number of positions?

1. Eight
2. Seven
3. Six
4. Five